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plants are sound. The author insists upon the extreme antiquity of the continents and the fact that the present ocean beds have always been such.

The main drawback in the book is the almost entire absence of illustrations, of which there are not a dozen. The reader, however, is constantly referred to a map. While an excellent book for the British student, the American reader will labor under the disadvantage of reference to the local geology of Scotland and England, to the exclusion of the broader views to be derived from a study of the physical geology of his own continent. Compared with the physical geography of our own Guyot, we miss the elegant diction and broad generalizations of the leading physical geographer of his time. The American "Physical Geography" with its beautiful illustration and maps, which appeal so forcibly to the eye, is a much more valuable aid to the naturalist. Young's, however, is an excellent book to read in connection with Guyot.

HALF HOURS WITH THE MICROSCOPE.*—The issue of "Putnam's Popular Manuals" has furnished us a new edition of this best of books for beginners who take up the microscope as a recreation or as a means of studying general natural history. The new edition includes all the advantages of the first. Something between a catalogue of objects and a treatise upon them, it groups together, in a manner both convenient and sufficiently natural, a large number of fascinating microscopic views. The clear and numerous illustrations by Tuffen West, which are rather constructions of the objects than drawings of any one possible view of them, are not on that account imaginary and faulty as has been claimed, but all the better adapted to their purpose.

With the exception of the considerably and judiciously enlarged introductory chapter on the structure of the microscope by the author, in which the binocular receives such unqualified approval as it deserves and receives from those who use it for similar work, and a good half-hour, by F. Kitton, with polarized light illustrated by a bright chromo-lithograph, this edition is not much modernized nor is it much the worse for remaining as it was originally constructed.

*Half Hours with the Microscope; being a popular guide to the use of the microscope as a means of amusement and instruction. By Edwin Lankester, M. D. Illustrated from nature, by Tuffen West. New York: G. P. Putnam's sons, 1874.

The appendix by Thos. Ketteringham, on the preparation and mounting of objects, is useful to beginners, though somewhat more in need of revision than the body of the work.—R. H. W.

BOTANY.

SEX IN PLANTS.—The remarks of Dr. John Stockton Hough on sex in plants (p. 19, *AMERICAN NATURALIST*, 1874) are so kind and complimentary to me, that only a desire to aid science, a desire I am sure my friend will respect, leads me to offer the following remarks.

That Dr. Hough has mistaken my views is clear, from his suggestion that I should have used the word “development” in my papers. Nothing was further from my thoughts. I have endeavored to show that sex is determined before development begins; and I have used the term vitality or vigor in order to express the determining power. In a field so wholly new, as this question was when I entered into it, I had great difficulty in finding terms to represent the facts properly; but whenever I have used the terms vigor or vitality, I have always explained that I meant by them a high or low degree of life whatever that might be. If two plants or parts of plants equally “developed,” were placed under the same circumstances as regards nutrition, and one died while the other passed through uninjured, this I call a test of vitality. In the one case there is a low vital power, in the other a higher; this I have taken as the chief factor in deciding sex, and “development” has clearly no place in the idea.

That Dr. Hough has not read my papers very closely also appears from his quotations. It was I and not Mr. Darwin, who recorded the fact that female branches sometimes appeared on male silver maples; and I also gave the account of Mr. Arnold's cross-experiments, both in the “Proceedings of the Academy of Natural Sciences” of Philadelphia, before the dates he refers to. These are minor errors to be sure, but they lead to the fear that there may be greater ones; and that greater ones do occur is clear from his quoting me as saying that, “In Norway spruces it is only in the fourth or fifth year, when vitality in the spur is nearly exhausted, that male flowers abundantly appear.” I never said anything of the kind; Norway spruces have no spurs. Again I am made to build considerably on the Cupuliferæ in my arguments